REMARKS

Favorable reconsideration of this application in light of the following discussion is respectfully requested.

Claims 1-9 are presently active in this case. The present amendment amends Claims 1-9. The above amendment shows the amended claims in clean form; the attachment shows a marked-up copy for the Examiner's convenience.

In the outstanding Office Action, the Abstract was objected to because of informalities. Claims 4-10 were objected to as being in improper multiple dependent form. Claims 1-3 were rejected under 35 U.S.C. § 102(b) as anticipated by an article by W. A. Heinemann.

In response to the objection to the Abstract, the Abstract is amended to correct the noted informalities. In light of its formal nature, the changes to the Abstract do not raise a question of new matter.

In response to the rejection of Claims 1-3 under 35 U.S.C. § 102(b), Applicants have amended Claim 1 to traverse this rejection.

Briefly recapitulating, Applicants' invention relates to a conventional single roll method in which molten metal is fed through a nozzle on a surface of a cooling roll not tangentially but in a direction of collision with the roll. More specifically, the invention comprises a first cooling roll, a nozzle arranged to eject molten metal on a surface of a cooling roll not tangentially but in a direction of collision with the roll[2]. Applicants' invention, therefore, improves upon the conventional single roll. The claimed invention thus leads to improved efficiency and stability in metal flake production.

[2] See the original specification at page 9, lines 11-15.

The first cooling roll is adapted to quench molten metal ejected from the nozzle to produce metal thin bodies and at least a second cooling roll on which the produced bodies are hit into metal flakes, the second cooling roll also serving for solidification of the molten metal not solidified by the first cooling roll.

The Heinemann article, on the other hand, discloses atomizer rolls, using rolls of a double or twin roll method described in the application as prior art. The cited atomizer rolls are different from the claimed metal-flake manufacturing apparatus using the cooling roll of the single roll method to all.

Further, the atomizer roll method requires a particular size or dimension of a gap between the cooling rolls arranged in parallel. If the gap is too small, more power is required to drive the cooling rolls for cooling and solidification and for rolling. Thus, a continuous thin strip is produced by the rolling and bulk density is decreased.

If the gap of a twin roll type apparatus is enlarged, cooling by the rolls is not possible, resulting in failure of the flakes being produced by the twin roll.

Thus, the apparatus described in Heinemann requires roll-gap adjustments whereas the present invention can efficiently produce metal flakes of uniform quality without difficult roll gap adjustment.

In light of the above amendments to Claim 1, Applicants submit that the present invention now defines over the Heinemann reference.

Consequently, in view of the present amendment, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal allowance. A Notice of Allowance for Claims 1-9 is earnestly solicited.

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, he or she is encouraged to contact Applicants' undersigned representative at the below listed telephone number.

Respectfully submitted,

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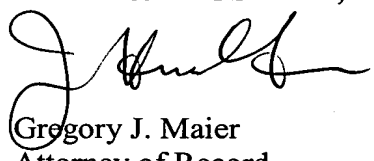

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IN THE CLAIMS

--1. (Amended) A metal-flake manufacturing apparatus, [characterized in that] a first cooling roll, a nozzle is arranged to eject molten metal on a surface of the first cooling roll [surface and cooling rolls, which] not tangentially but in a direction of collision with the latter, said first cooling roll adapted to quench the molten metal from [this] the nozzle into metal thin bodies and at least a second cooling roll on which the produced metal thin bodies are hit into flakes, said second cooling roll also serving for solidification of the molten metal not solidified by the first cooling roll, said cooling rolls being spaced apart by [are arranged in plural numbers and are spaced to have] a gap [or gaps] of a size greater than thickness of metal thin bodies.

2. (Amended) A metal-flake manufacturing apparatus according to claim 1, [characterized in that] wherein said plurality of cooling rolls are arranged at different heights so that the produced metal thin bodies are sequentially hit on the rolls.

3. (Amended) A metal-flake manufacturing apparatus according to claim 1 [or 2, characterized in that], wherein rotational axes of said cooling rolls are mutually out of parallelism.

4. (Amended) A metal-flake manufacturing apparatus according to [any one of claims 1 to 3, characterized in that] claim 1, wherein said cooling rolls are adapted to rotate at different peripheral velocities.

5. (Amended) A metal-flake manufacturing apparatus according to [any one of claims 1 to 4] claim 1, [characterized in that] wherein said cooling rolls are adapted to have different roll diameters.

6. (Amended) A metal-flake manufacturing apparatus according to [any one of claims 1 to 5, characterized in that] claim 1, wherein said nozzle has a plurality of nozzle openings along an axis of the cooling roll.

7. (Amended) A metal-flake manufacturing apparatus according to claim 6, [characterized in that] wherein the nozzle openings of said nozzle have a sectional area of 0.78-78 mm^2.

8. (Amended) A metal-flake manufacturing apparatus according to [any one of claims 1 to 7, characterized in that] claim 1, wherein said nozzle and said cooling rolls are placed in atmospheric gas and windbreak members are arranged to prevent the atmospheric gas from being swirled by the rotating cooling rolls.

9. (Amended) A metal-flake manufacturing apparatus according to claim 8, [characterized in that] wherein gas from atmospheric gas supply nozzles for supplying said atmospheric gas is directed to guide the metal flakes toward a storage box in which metal flakes are to be stored.

10. (Amended) A metal-flake manufacturing apparatus according to claim 9, [characterized in that] wherein said storage box has a cooler for cooling the metal flakes stored.

IN THE ABSTRACT

Please amend the Abstract to read as follows:

Cooling rolls [(11)] and [(12)] are spaced to have a gas of a size greater than thickness of metal thin bodies to be produced. A nozzle [(14)] is arranged to eject molten metal onto a

surface of the cooling roll [(11)]. The first cooling roll [(11)] quenches molten metal ejected from the nozzle [(14)] into metal thin bodies. On the next cooling roll [(12)], the produced metal thin bodies are hit into flakes and excessive molten metal is made into metal thin bodies. Thus, freedom of supplying the molten metal is enhanced and metal flakes can be efficiently produced.